# *Prime Location for Halibut Aquaculture*

## Information Prepared for:

*Stolt Sea Farms Ltd.*

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**Prepared by:**

**Department of Fisheries & Aquaculture**

**Department of Economic Development & Tourism**

***-July 1994***

New Nouveau Brunswick

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# 1.0 Introduction

New Brunswick's Departments of Fisheries and Aquaculture and Economic Development and Tourism would like to thank Stolt Sea Farm Ltd. for the opportunity to present this overview of the reasons why New Brunswick is the prime location for a North American commercial halibut hatchery.

The Department of Fisheries and Aquaculture (DFA) is committed to the development of halibut aquaculture in New Brunswick as it represents an important part of the overall departmental strategy. Because of the strategic nature of this operation, DFA is willing to assist Stolt Sea Farm Ltd. with their expertise and skilled staff, the resources at the St. Andrews Biological Station, an excellent 'pilot project' location at the Aquarium and Marine Centre in Shippagan (or alternative sites) and numerous locations for a larger scale commercial operation. The Department of Economic Development and Tourism (EDT) is also committed to this project as it represents a broadening of our industrial base and an innovative approach to a declining traditional industry in the province. EDT is prepared assist in the financing of the project (in conjunction with the Atlantic Canada Opportunities Agency) as well as assistance with other areas (site location, labour market information, etc.) that will help facilitate the Stolt Sea Farm Ltd. halibut aquaculture operation in New Brunswick.

This document will present the case for a Stolt Sea Farm Ltd. North American commercial halibut aquaculture operation and then develop the reasons why New Brunswick is the right location for the fish farm. In summary, New Brunswick offers:

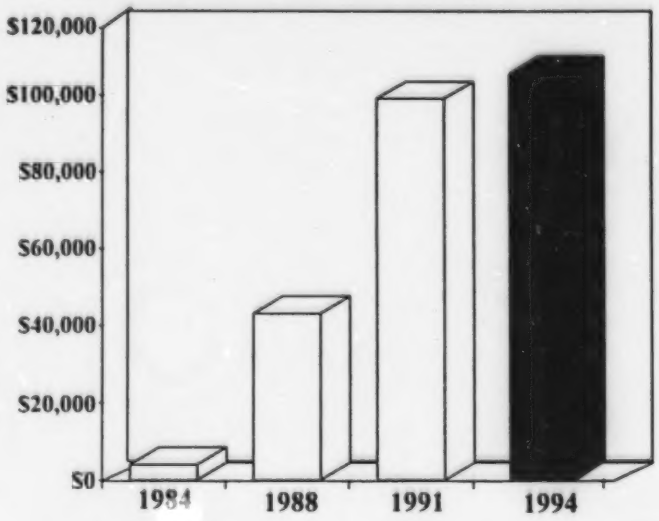
- Proximity to the major U.S. and Canadian markets (over 68 million 1300 km)
- Excellent growing conditions with a proven track record
- Coordinated government effort (DFA, EDT, ACOA)
- Low operating cost environment (electricity, land, labour, primary growing materials, shipping costs to U.S. market, etc.)
- R&D Tax incentives
- Existing aquaculture infrastructure (food suppliers, hatcheries, technical expertise)
- The St. Andrews Research Station for technical assistance
- Other public/private research facilities
- Existing Stolt Sea Farm operations with growth potential

New Brunswick is a prime location for the Stolt Sea Farms Ltd. halibut aquaculture operation to position itself for development of its halibut markets in the North American market.

# 2.0 Aquaculture in New Brunswick: Background

Salmon aquaculture in New Brunswick is considered a significant economic success story. The industry has grown from one farm in 1977/78 to 68 growout sites in 1994. New Brunswick annual sales are estimated to exceed $100 million (12,000 MT of salmon). Salmon represents the single largest food commodity produced in New Brunswick based on sales value of production.

**Growth in New Brunswick's Finfish Aquaculture ( 000's)**




There are four reasons that attribute to the success of the New Brunswick salmon aquaculture industry:

1. The pristine waters of the Bay of Fundy. The currents, back eddies, and highest tides in the world (8m) create a habitat for fish that is unparalleled.

2. The Saint John strain of Atlantic Salmon has proven to be outstanding in its performance. It has a tremendous growth rate, this strain produces up to a 4 kg salmon after approximately 18 months in sea water. Very low grilsefication rates make for a top-quality product.

3. The farmers that have entered the industry are exceptional in their performance, their work and tenacity have made the industry what it is today. This effort has been complimented by a comprehensive training program, consisting of both formal education and technical seminars.

4. Ongoing research and development efforts for improving the efficiency of aquaculture operations.

# 2.0 Aquaculture in New Brunswick *(cont.)*

The aquaculture pioneers were encouraged by the work of scientists at the federal biological station in St. Andrews, New Brunswick, and by the commercially successful salmon farms in Europe. Investment capital financing has been available from large international companies, as well as Provincial and Federal governments and traditional lenders. Decisions have been made by those regulating and monitoring the industry to promote orderly growth. Strong employment growth has been experienced in growout sites, hatcheries, spin-off industries, research institutions and industry associations.

The 45 or more owners, most of whom are small owner/operators, employ an estimated 500 people directly to tend their caged salmon. Estimates on the number employed in hatcheries and other spin-off industries vary up to 1500, which include: feed production, cage, net, barge and specialized equipment manufacturing, equipment service and repair, marine equipment sales, fish processing, transportation, packaging, construction of privately owned infrastructure, health and diagnostic services, consultants, research establishments, and schools offering specialized courses.

Salmon spend their first 18 months in one of 20 hatcheries located throughout New Brunswick. The salmon smolt are then transferred to hundreds of sea cages, which are concentrated in the Western Isles region of the Bay of Fundy. There the fish are fed and grown to 4 kg more or less, before being marketed about 18 months later.

The majority of market fish were sold as a fresh product. All of the 14 salmon processors in New Brunswick can provide steaks and fillets produced mechanically or manually. Probably less than one percent of New Brunswick salmon is smoked, or prepared as specialty products. Industry presently exports approximately 75% of its salmon to the United States with the remainder marketed in Ontario and Quebec. The development of new salmon products could increase the percentage of exports.

The industry's greatest advantages are its proximity to large markets in the Eastern United States and its consistent year round supply processed in modern facilities. Fish can be on the table in New England within 24 hours after being removed from the water. The strong markets and well developed transportation and marketing systems draw on the experience established by processors of the wild fisheries. Many growers exercise their own quality control and market their better grade of salmon under specific brand names.

The industry is concentrated in such a small area that communications are good between growers within Canada and on both sides of the Canada/USA border. The industry associations in both countries have strong leadership and good participation from the growers. The concentration of production also means that optimal quality and freshness of market fish can be maintained due to the close proximity of processing facilities and farms.

# 2.0 Aquaculture in New Brunswick *(cont.)*

The industry is characterized by a high degree of cooperation within the business community and between industry and both levels of government. Industry development and growth had been guided since the outset by a joint "government/industry" development strategy for the Bay of Fundy Salmon Aquaculture Industry. This strategy emphasizes fish health diagnostics, education and training of growers, technology development and transfer, and financial management and support. Emphasis was placed on the production of quality products with the development of a quality assurance manual for salmon processing in 1985.

Industry investments have been achieved based on orderly development and management of the industry.

# 3.0 Halibut Market in North America

Fresh halibut is considered a gourmet item in the North American seafood market and consumer demand is high. In the United States halibut demand is nationwide, not localized as many other fish products. This demand profile offers significant potential for halibut aquaculture, given a North American population base has of over 250 million people and a growing per capita consumption rate for seafood products. Halibut markets are already established based on the traditional fishery catches. Market preference appears to be for halibut in the 20-40 lb. category. These markets include value added products and many consumers prefer the white flesh halibut to other fish products such as salmon. However, supplies from the traditional fishery are declining significantly. These supplies are also sporadic, with 48 hour "floods" from the Pacific wild catch likely to cause overnight drops in prices. The subject product is also considered to be of relatively poor quality.

Fresh halibut from aquaculture operations in New Brunswick would offer consistent supplies of fresh, high quality product to a high demand, nation-wide market. Potential returns on investment are considered high.

# 4.0 Halibut Culture in New Brunswick: Status

The New Brunswick Salmon Aquaculture Development Strategy is a five year planning document prepared jointly by the salmon culture industry and two levels of government. The document established strategic objectives for the various components of the industry and is intended to support a comprehensive approach to industry development.

Diversification of the species base in the New Brunswick aquaculture industry was identified as a key objective in the development strategy. All parties to the strategy agreed that the commercialization of halibut must be accelerated and that a comprehensive research and development program was required.

A comprehensive program to meet the stated objective as then prepared. The program consists of six inter-related components: broodstock collectic , broodstock maintenance, early rearing, nutrition, fish health and technology development.

The principal aim of the broodstock collection component is to capture large numbers of wild halibut to ensure genetic diversity and the development of strains suitable for culture. The broodstock maintenance component is focused on locating the broodstock in suitable locations to prevent loss of all stocks through disaster. Growth performance monitoring is also undertaken.

Halibut broodstock are maintained at both the St. Andrews Biological Station (SABS) and Harbour de Loutre Products Ltd., a salmon farm located on Campobello Island. Growth performance monitoring of the halibut broodstock at Harbour de Loutre Products indicate an exceptional rate of growth. The broodstock are maintained at the marine site in modified salmon cages, including a flat mesh bottom.

The early rearing component is aimed at establishing the requirements and techniques to reproduce juvenile halibut at a commercially sustainable level. The federal St. Andrews Biological Station (SABS) has been conducting research in this area for a number of years. Recently, however; the overall commitment to this effort has been heightened in response to the need to diversify the aquaculture industry. SABS is currently undergoing renovations to facilitate accelerating the pace of the program. The Provincial Marine Centre in Shippagan is also undergoing renovations and will be used to complement the overall program.

Establishing the nutritional requirements of halibut at all stages of development is the main objective of the nutrition component. This work will be undertaken in collaboration with federal and provincial scientists and local feed companies.

Fish health is identified as a critical component given that little information is available in this area. The Research and Productivity Council, a private laboratory active in many areas of aquaculture - including disease management, is spearheading the fish health program.

The technology development component will focus on developing new technology required in the commercialization of halibut. Examples include holding tank designs, broodstock collection nets and modified sea pens.

New Brunswick recognizes that the key to developing and maintaining a competitive halibut culture industry will be to have a proactive and ongoing research and development program.

This program would complement Stolt Sea Farms Ltd. investments in halibut culture in New Brunswick.

# 5.0 Investing In New Brunswick: Strategic Advantages

**Light Manufacturing Operating Cost Comparison***

**1993 costs, *New York = 100***

| Location | Cost Index |
|---|---|
| Sioux Falls, South Dakota | 73.9 |
| Salt Lake City, Utah | 80.1 |
| Dallas, Texas | 80.6 |
| Nashville, Tennessee | 80.8 |
| **Moncton, New Brunswick** | **82.2** |
| London, Ontario | 84.0 |
| Atlanta, Georgia | 86.1 |
| Edmonton, Alberta | 86.3 |
| Phoenix, Arizona | 88.0 |
| Chicago, Illinois | 88.2 |
| Montreal, Quebec | 88.3 |
| Cleveland, Ohio | 90.1 |
| Los Angeles, California | 91.2 |
| Denver, Colorado | 91.6 |
| Toronto, Ontario | 92.3 |
| Windsor, Ontario | 92.3 |
| Seattle, Washington | 94.1 |
| Vancouver, British Columbia | 95.9 |
| Buffalo, New York | 97.1 |
| Boston, Massachusetts | 100.7 |
| Hartford, Connecticut | 105.8 |

**Source: The Globe & Mail, Nov. 2, 1993*

Because of the significant research and development costs associated with a fish farm operation and the availability of competitive substitute products, to effectively compete, operating costs have to be very efficient. General operating costs for manufacturing/processing operations in New Brunswick are highly competitive with any North American and European location. A recent study was done by the Boyd Company Location Consultants of Princeton, New Jersey to determine low cost areas in North America for light manufacturing/processing operations. The table shows where the New Brunswick location ranked.

The study used the following characteristics:

- Hourly labour cost
- Electric power
- Natural gas
- Construction amortization
- Heating and air conditioning
- Property taxes
- Shipping costs
- 100,000 square foot production facility
- 275 hourly workers
- Shipping to a North American market

The New Brunswick location was found to have a lower operating cost index than all but four U.S. locations.

As well, of the 4 locations that were found to have marginally lower costs, none of them are close to an international port such as the Port of Saint John in New Brunswick and they all are farther from the major U.S. and Canadian markets than New Brunswick.

## 5.1 NEW BRUNSWICK'S "LET'S DO BUSINESS" ATTITUDE

The Province of New Brunswick is committed to maintaining a sound industrial base and fully supports the investment and technology required to ensure continued economic growth. A few examples....

- The government of New Brunswick is a fiscal leader in Canada in enacting a bill which requires a balanced budget on the operating account over the period ending March 31, 1996 and every four years thereafter.

- A recent streamlining of the civil service, the privatization of certain government services and a new employee evaluation system based on productivity and quality of work have resulted in a more efficient and cost-effective government.

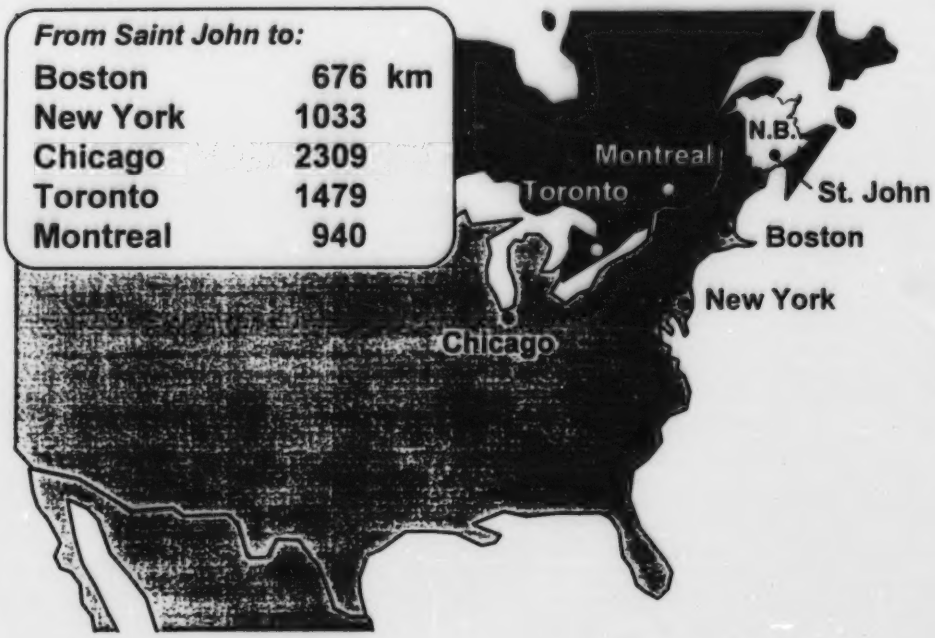
- Business taxation in minimized by the provincial government with no general Corporate Capital Tax, no charges to organizations for health insurance premiums, no payroll tax and Workers' Compensation rates among the lowest in Canada.

- Standard and Poors upgraded the provincial credit rating in 1991 from a single A plus to a double A minus, which we have maintained for two consecutive years.

- New Brunswick recognizes that commitment to quality is key to our growth and prosperity. Our programs offer companies an opportunity to implement quality control in all aspects of the workplace.

- Business and labour also work together with government on a Human Resource Council which helps workers and employees keep up-to-date in their training and skills. New Brunswick understands that the soundest investment of all is in New Brunswickers.

## 5.2 NEW BRUNSWICK: A PRIME EXPORT HUB FOR FISH PRODUCTS

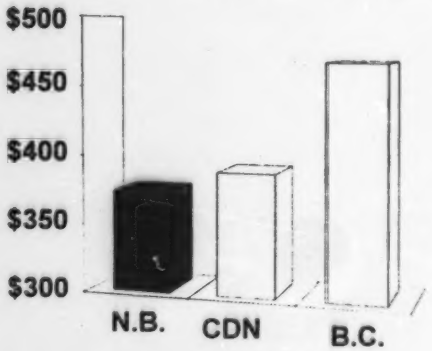



Market proximity is an important advantage that a Stolt Sea Farm Ltd. Halibut aquaculture operation would have from a New Brunswick location. New Brunswick is less than a days shipping from over 68 million U.S. and Canadian consumers and is closer to Europe than any U.S. port.

The map shows New Brunswick's location compared to the major eastern U.S. and Canadian markets. The inset shows the kilometres between Saint John and these markets.

## 5.3 LABOUR COST

**Average Weekly Earnings**
**Fish Products Industry***




*Employment, Earnings and Hours, Sept. 1993
Statistics Canada - Cat. No. 72-002

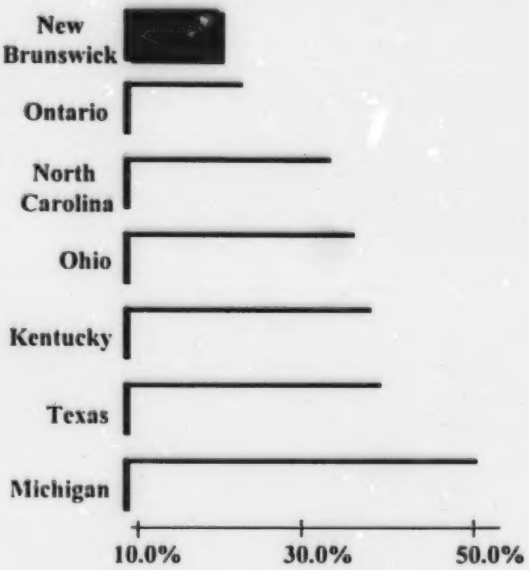
New Brunswick has highly competitive wages for workers in the fish products industry. The graph shows the average weekly wages for all employees in the fish products manufacturing trade for New Brunswick, Canada and British Columbia. The average wage in New Brunswick is over 20% lower than in B.C. for this industry.

As well, the wages for the highly specialized labour such as engineers, aquaculturalists, etc. will be very competitive with other locations due to the lower cost of living in New Brunswick. Housing, property taxes, rent and most recreational activities are at a lower cost than other Canadian locations.

## 5.4 FRINGE BENEFIT COSTS

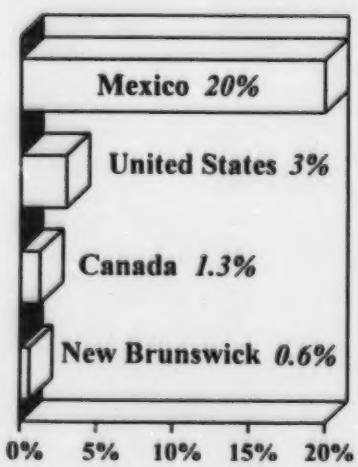
A big part of the cost advantage are the lower fringe benefits. Primarily, they are costs like Payroll tax, Medical Insurance premiums, social security, unemployment insurance, etc.) The graph shows an example of the fringe benefit costs facing companies in several North American locations. These figures were taken from a recent study that compared several U.S. and Canadian locations for a manufacturing operation and is relevant for general manufacturing and processing such as the Stolt Sea Farm operation because it reflects the cost of medical insurance and higher workers' compensation rates.

**Fringe Benefit Costs (% of Payroll)**
***-example manufacturing operation***




## 5.5 ECONOMIC STABILITY (INFLATION)

**1992 Inflation Rates**



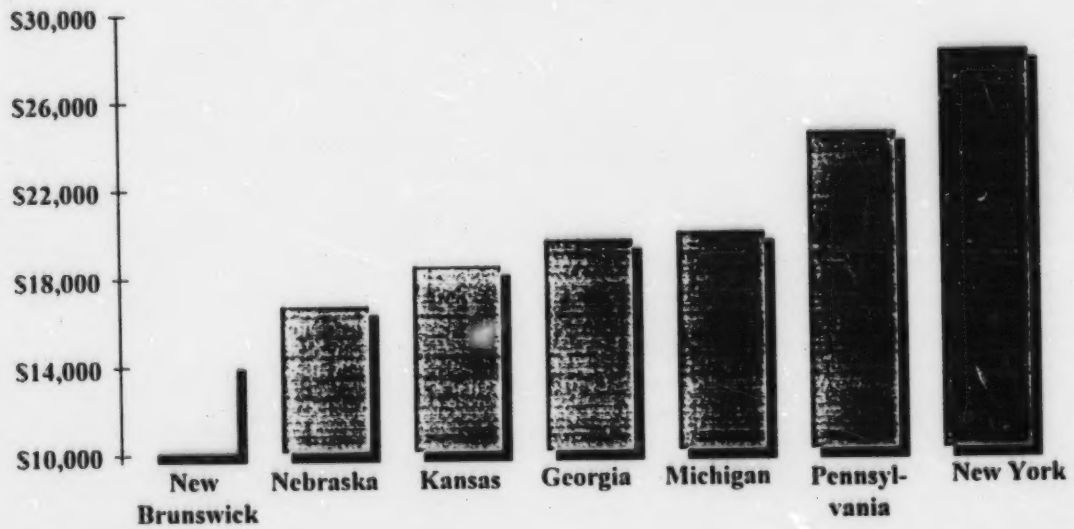

New Brunswick's inflation rate of 0.6% in 1992 was one of the lowest in the world. As well, New Brunswick's low inflation continued in 1993 at 1.3%. Low inflation means price stability which gives manufacturing/ processing companies security in predicting future cost levels.

## 5.6 ENERGY COSTS

NB Power's rates are among the lowest in North America. This lower cost has a visible impact on the bottom line. The graph exhibits NB Power's rate for a demand of 1,000 kW and a load factor of 300,000 kWh compared to U.S. locations (Source: NB Power & the Energy Information Administration, April 1993 rates). New Brunswick's power rates are also favourable to many Canadian provinces, however; the advantage is not as pronounced as when compared to the United States.

### Average Monthly Power Bill

***(1,000 kW, 300,000 kWh) - in US Funds****

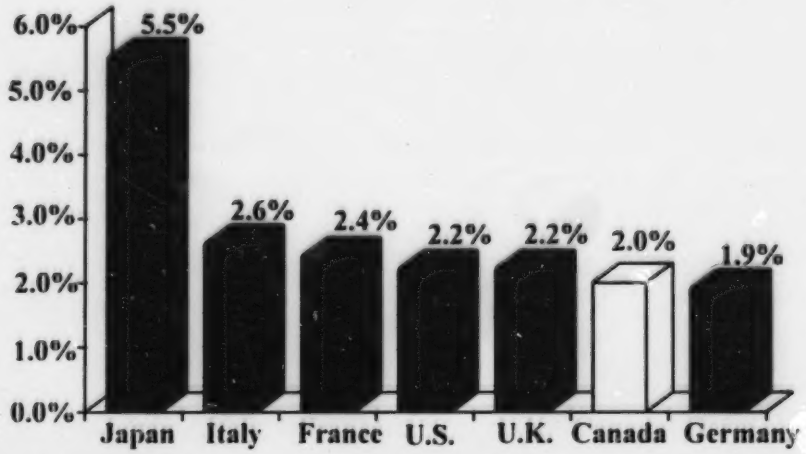



**Small Industrial Customers. $1 US = $1.35 CDN*

## 5.7 TAXATION IN NEW BRUNSWICK

Canada as a country has a very competitive tax system with our corporate tax burden being among the lowest of the industrialized countries. The following graph compares country corporate tax as a percentage of GDP.

**Corporate Taxes: International Comparison (1991)**




*Note: The figures represent taxes on corporations as a percent of GDP or GNP.*
*Source: Dept. of Finance, Economic Reference Tables, 1992.*

As with all industrialized countries, both Canada and New Brunswick have a basic tax structure with a variety of different rates and tax credits to encourage development of certain sectors or economic areas. In terms of total taxation, pre-tax, business, and corporate, New Brunswick's tax system is very competitive with other jurisdictions in North America.

It is important to point out that some areas in North America promote a low corporate tax while their very high pre-tax and municipal taxes make up a more significant part of taxation than other jurisdictions. In fact, this seems to be a prevalent trend in the U.S. A recent survey by Coopers & Lybrand revealed that out of 348 U.S. companies, property taxes made up on average *37% of the total tax burden.* This tax is not usually even mentioned when discussing taxation. New Brunswick employs a streamlined taxation system that is very competitive.

## 5.8 TAX CREDIT PROGRAMS

### Federal Investment Tax Credit

Deducted from Federal Tax payable, this credit is 10% of net investment in equipment and structures used in manufacturing, processing, mining, oil & gas, logging, farming, and fishing. Investment Tax Credits which exceed federal tax payable can be carried back to reduce federal tax in the three previous years or carried forward up to ten years.

### Federal Research & Development Incentives

The tax credit and write-offs for R&D costs, with the exception of buildings claimed for R&D will be 20% of R&D expenditures. There are also specialized R&D tax incentives as high as 35% of expenditures.

### Provincial R&D Tax Credits

R&D activities are eligible for a 10% tax credit towards the payment of NB corporate tax.

### Duty Drawbacks

The Canadian government has arranged for the return of duty paid when the goods are imported if they are later exported or used for certain domestic manufacturing. To qualify for a drawback, you must show that the goods were later exported, destroyed under Customs supervision, discovered to be obsolete or surplus, used as ship's stores or used in the assembly, manufacture, or attachment to goods that were later exported or consumed in Canada. The maximum allowable drawback is 100% of the duties paid. These duties are now recovered as an input tax credit.

### *Foreign Tax Credit*

Corporations which have foreign source income and are resident in Canada at any time in the year are eligible for a credit on foreign taxes paid. A credit is allowed against Canadian tax payable for the lesser of the foreign tax paid and the Canadian tax on the foreign source income.

## 5.9 INFRASTRUCTURE

### Highway Shipping

New Brunswick is serviced by all major trucking lines offering overnight service to both Boston and Montreal. ***Manufacturers can obtain substantial reductions in cost by negotiating transportation contracts directly with the individual freight companies.***

**ATLANTIC REGION FREIGHT ASSISTANCE PROGRAM**

There is a program in effect to offset a portion of the cost of shipping by truck or railway out of the Atlantic Provinces. ***For shipping in Canada, this program can reduce the cost of shipping by up to 20% for Quebec locations, and 10 - 12% for Ontario destinations.*** For an example, shipping from Saint John to the following Destinations:

| *From Saint John to:* | Cost Reduction |
|---|---|
| Montreal, Quebec | 18% |
| Toronto, Ontario | 10% |
| Windsor, Detroit | 7.5% |

***A reduction of 10% of shipping costs to the major Canadian markets provides another incentive to locate in New Brunswick.***

### Railway Shipping

From New Brunswick, Businesses are able to access both the Canadian and U.S. markets by way of the Canadian Pacific and Canadian National Railway systems. Currently, the Railway system is under a restructuring program which we are confident will improve Railway service in New Brunswick. ***Railway Shipping westward in Canada is also eligible for the reduced shipping rates.***

### Air services

Air Services are provided to New Brunswick by Air Canada and its partner Air Nova. As well, Canadian Airlines International with its Air Atlantic Connector service. There are daily flights to Boston, New York, Toronto, Montreal and Vancouver with daily connections to Europe. The Moncton, New Brunswick airport is upgrading its services to be the major air service cargo shipping terminal in eastern Canada.

# *New Brunswick Based...*

# *...Globally Connected*

**From Saint John, N.B. to:**

| | |
|---|---|
| Montreal | 940 kms |
| Toronto | 1,479 |
| Boston | 676 |
| New York | 1,033 |
| Chicago | 2,309 |
| Los Angeles | 5,869 |

**From Saint John Harbor to:***

| | |
|---|---|
| Liverpool | 2,700 |
| Rotterdam | 3,017 |
| Hamburg | 3,176 |
| Panama | 2,388 |
| New York | 537 |
| Miami | 1,363 |
| Tokyo | 10,039 |

**in nautical miles*

**Railway System:**
Linked to Canada and the United States.

**Air Service:**
Numerous Flights to major destinations.

## The Port of Saint John

Saint John, New Brunswick has some of the most modern and best equipped terminal facilities in North America. ***The Port offers year round deep water service.*** Accessed directly by Railway and Trucking operations, the Port's specialized terminals offer high speed handling of containers, forest products and bulk cargoes.

Here are a few important points:

- **Extensive open area, heated shed space**
- **Rail tracks to quay side for handling heavy lifts**
- **Roll on/Roll off facility**
- **Berthing facilities**
- **Total docking frontage of 4783 metres**
- **Shed Storage areas of 105, 523 square metres**
- **Largest forest products terminal on North America's east coast**
- **Large potash terminal**

Locating in New Brunswick means that companies will incur very little additional inland freight for transporting goods via the Port of Saint John. As well, the cost of shipping from any location in New Brunswick to the Port of Saint John will be reduced by 9% from the Atlantic Region Freight Assistance Program.

The Port of Saint John has gained a reputation for excellence and that will help companies maximize shipping efficiency.

## The Port of Belledune

**Location:** *Chaleur Bay, Gulf of St. Lawrence*

**Administration:**
- Ports Canada (Ottawa)
- Local Ports Coordinator
- Tel: (506) 522-2100
- Fax: (506) 522-5703

**Major Facility:**
- Ports Canada Wharf
- approach channel: width not restricted, depth 13.1 m
- berthage: length 155.4 m, water depth 11.3 m
- belt conveyor system

**Pilotage:**
- Not compulsory but available

**Seasonality:**
- Open year round

## The Miramichi Port
***(includes Chatham and Newcastle)***

**Location:** *Miramichi River, Gulf of St. Lawrence*

**Administration:**
- Transport Canada
- Port Manager
- Tel: (506) 622-0918 (Newcastle)
  (506) 773-7542 (Chatham)

**Major Facility at Chatham:**
- Transport Canada Wharf
- approach channel: width 110 m, depth 7.6 m
- berthage: length 179 m, water depth 8.8 m
- unheated shed 3,900 $m^2$
- open storage area 7,000 $m^2$

**Major Facility at Newcastle:**
- Transport Canada Wharf
- approach channel: width 100 m, depth 7.6 m
- berthage: length 313 m, water depth 9 m
- railway track
- unheated sheds 10,300 $m^2$ and 2,325 $m^2$
- open storage area 9,000 $m^2$

**Pilotage:**
- Compulsory

**Seasonality:**
- Open year round with icebreaker service during winter months

## Telecommunications

The New Brunswick Telephone Company, Limited is the major full service supplier of telecommunications in New Brunswick. With more than 100 years of experience NBTel is committed to enhancing its services through research and development, innovation, and the adaptation of state-of-the-art technology. As a member of the Stentor consortium of telephone companies, NBTel serves provincial, national and international customers alike.

**SOME OF NBTEL'S INNOVATIONS:**

- the first telephone company in Canada to offer 800 Plus Service
- the first telephone company to offer Advantage Canada
- the first telephone company in Canada to extend a service which combines voice and data transmission (ISDN) into a commercial business environment
- the first telephone company in Canada to provide a digital communication network for all customers
- the first telephone company in Canada to provide universal residential voice mail services

**With NBTel's state of the art fully digital switching systems, doing business around the world by phone, fax or video conferencing is instantaneous.**

The following table shows some of the national and international companies who have set up centres in New Brunswick because of the advantages that both the province and NBTel offered:

| COMPANY | CENTRE ACTIVITY | SCOPE |
|---|---|---|
| Royal Bank | Financial Services & TeleBanking | National |
| Unisys | Computer Hot Line | National |
| Canada Trust | Financial Services & TeleBanking | National |
| Northern Telecom | Customer Service | International |
| Camco (General Electric Subsidiary) | Customer Service | National |
| Purolator Courier | Customer Service Super Center | National |
| Canada Post | Customer Service Super Center | National |
| Federal Express | Nation Billing Center | National |
| McCain Foods Headquarters | Frozen Foods | International |
| Irving Headquarters | Petroleum | International |
| Livingston International | Border Brokers | International |
| CP Express Transport | Freight Forwarding | National |
| MEDITrust | Pharmaceutical (TelePharmacy) | National |
| Via Rail | Reservations | International |

## 5.10 HEAD OFFICE/CORPORATE SUPPORT OPERATING ENVIRONMENT

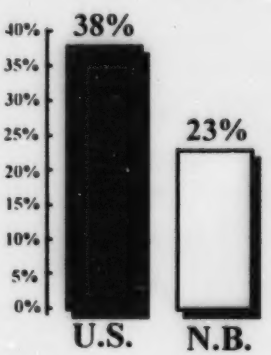
If Stolt Sea Farms Ltd. is looking to set up a North American head office/corporate support operation, New Brunswick is a very competitive operating cost location combined with one of the best telecommunications systems in the world.

A recent study was commissioned to test the cost effectiveness of New Brunswick as a telecommunications-based corporate office support centre compared to prime U.S. locations. The study (prepared by the Boyd Company Location Consultants, Princeton, NJ) was based on a realistic model of a typical corporate support/call centre of 75 employees with an equal distribution of calling in the United States and Canada. The findings reveal that New Brunswick's overall cost structure is highly competitive with all U.S. locations from traditional "back office" locations such as Chicago and New York to low cost leaders such as Panama City, Florida and Omaha, Nebraska.

### Labour Cost

New Brunswick had the lowest labour cost of any location in the study. Several of the low cost U.S. locations (Panama City, Omaha, etc.) had lower base wages but New Brunswick's lower fringe benefit rate translated into the lower cost overall structure. ***The research showed that the average fringe rate for U.S. locations is 38% and for NB 23% applied to base payroll.*** This 15% differential translates into a very tangible cost advantage over U.S. locations. It was also stated that the New Brunswick labour force sample that was used in the study was among the highest for quality and education. *Bilingualism and educational attainment were found to be key factors in the quality of the typical call centre employee in New Brunswick.*

**Typical Fringe Benefit Costs (% of Payroll)**




### Energy Costs

NB Power's energy rates reflect favorably when compared to U.S. locations. New Brunswick ranked sixth lowest out of the 26 locations and had significantly lower rates than locations such as New York, Pittsburgh, and Chicago.

### Lease Costs

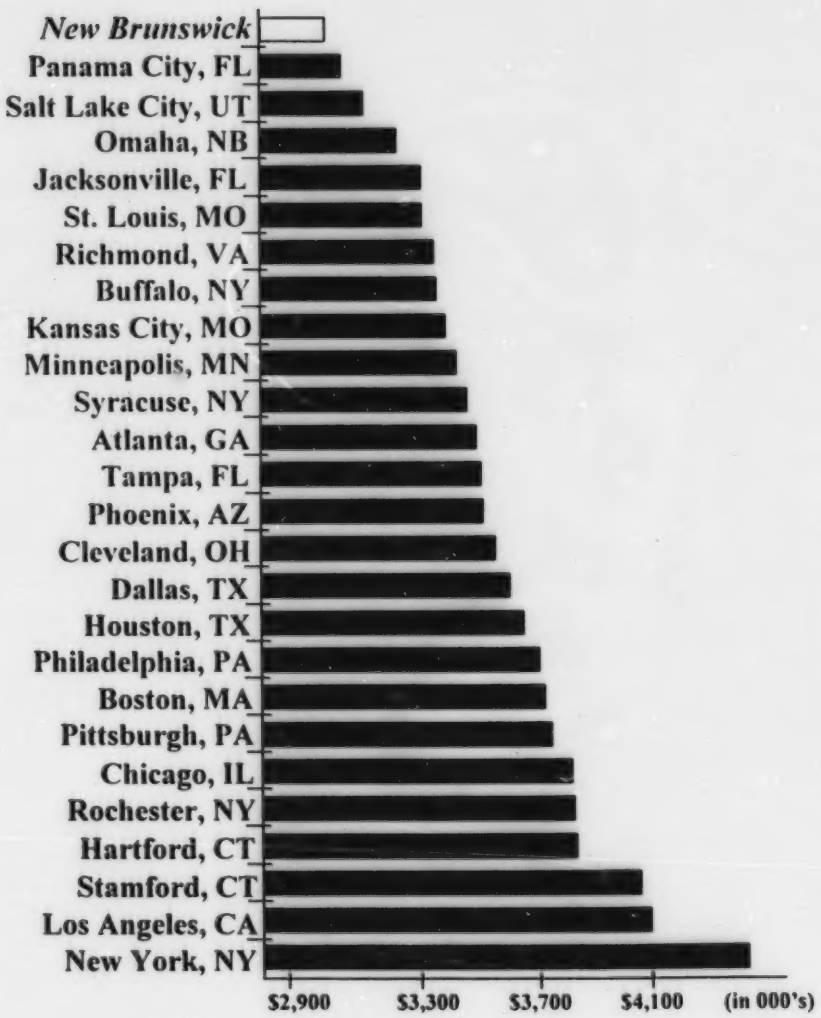
New Brunswick's ranking of second lowest in this area has important implications. Irrespective of short term recessionary pressures on the lease market, New Brunswick remains a low cost area for leasing Class A office space.

## Telecommunication Costs

New Brunswick had the lowest costs for telecommunications given the established parameters that gave equal weight to U.S. and Canadian call volumes. Even when the U.S. call volume is substantially higher, NBTel's cost structure allows for very competitive rates.

### A Comparative Cost Analysis for Corporate Support Operations in 25 U.S. locations

*Annual Operating Costs (in 000's)*




Source: The Boyd Company Inc. Location Consultants, Princeton, NJ.

# 6.0 Investing in Canada: Strategic Advantages

## 6.1 North American Free Trade Agreement

The North American Free Trade Agreement (NAFTA) has very important ramifications to companies who have sizable markets in North America. It will allow companies who set up North American manufacturing/processing operations to take advantage of the largest single economy with no "economic" borders. Companies who manufacture in North America will have access to a total market of 360 million consumers with a $6 trillion economic base and not have to pay any tariffs or subsidies to get their product to market.

### New Brunswick and the NAFTA

#### General:

The NAFTA promotes the manufacture of products in North America by reducing all duties, tariffs, and bureaucratic impediments. The NAFTA creates a pervasive argument for foreign companies (especially ones who export substantial product to North America) to set up manufacturing operations in North America as a way of avoiding quotas imposed on them.

- Within 15 years of implementation, all tariffs will be eliminated on North American products traded between Canada, the United States, and Mexico
- By 1998, all trade between the United States and Canada will be duty free. Most is duty free already.
- Mexican tariffs will be phased out and eliminated. These tariffs, now, can rise as high as 50%.
- Products manufactured in Canada, the U.S., and Mexico from raw material made in Canada, the U.S., and Mexico will be free of quotas.

#### Specific to the Fish Industry:

Under the NAFTA, fish and fish products will move freely from country to country in North America. As well, aquaculture supplies such as feed will be free of tariffs. If Stolt Sea Farms Ltd. faces tariffs when exporting to the U.S. from Norway, a New Brunswick location would eliminate those tariffs. As well, there is a dispute mechanism built into the NAFTA that allows for equitable settlement.

## 6.2 QUALITY OF LIFE IN NEW BRUNSWICK

The quality of life in New Brunswick is second to none. This is very important because the social environment that employees live in effects the quality of their work. ***New Brunswicker's take advantage of a clean environment, a low crime rate, affordable homes, and easily accessed leisure activities.***

Canada as a whole is known for its quality of life. According to the 1994 United Nations Human Development Index, ***Canada has the highest quality of life of any nation based on life expectancy, education, and standard of living.*** New Brunswick will provide good social environment for a company's employees.

**Top 10 countries the 1994 United Nations Human Development report rated for life expectancy, education and standard of living:**

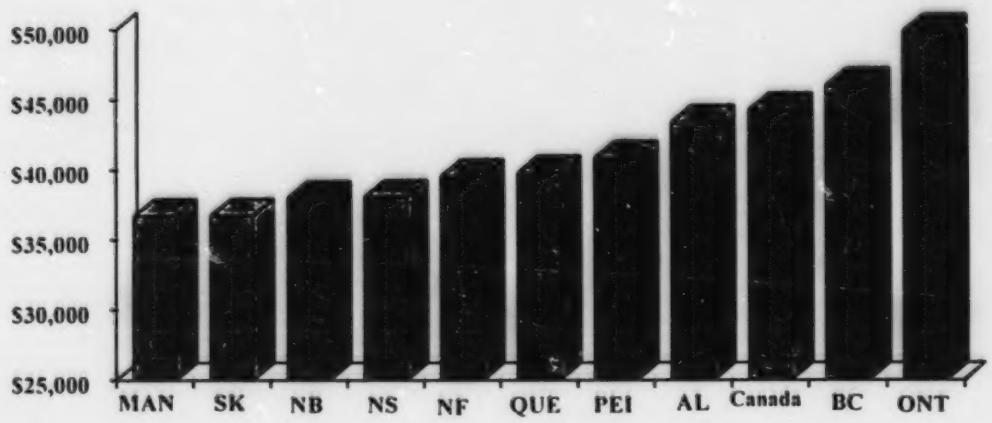
1. *Canada*
2. Switzerland
3. Japan
4. Sweden
5. Norway
6. France
7. Australia
8. USA
9. Netherlands
10. United Kingdom

## COST OF LIVING

New Brunswick has a lower cost of living than most other Canadian provinces. The following chart shows the average household expenditures in each of the provinces. Average household expenditures includes: food, shelter, clothing, transportation, health & personal care, recreation, reading and education, taxes & securities and other misc. expenses.

# Cost of Living Comparison

***Average Household Expenditures****




*Source: Canadian Markets 1993

## 6.3 CANADA'S OPERATING COST ENVIRONMENT

Canada as a whole has seen a significant increase in manufacturing productivity in the last few years. The graph shows the unit labour cost for manufacturing with 1991 as a base year. Through efficiencies and cost containment, Canadian manufacturing firms have seen labour costs per unit decrease by 20%. Rising health care and other non-wage costs combined with good productivity has allowed US manufacturers to drop unit labour costs, but by only 5%.

*Source: OECD Economic Outlook, December 1993*

# 7.0 Halibut Project Opportunities for Stolt Sea Farms Ltd.

## 7.1 AQUARIUM AND MARINE CENTRE IN SHIPPAGAN

The New Brunswick government is prepared to allocate space at the Aquarium and Marine Centre in Shippagan to Stolt Sea Farms Ltd. to support a pilot halibut hatchery. Personnel at the Marine Centre active in the shellfish hatchery and those familiar with artemia are available for secondment to the project. The pilot hatchery project could be linked directly to the halibut research and development program at the St. Andrews Biological Station.

This option provides Stolt Sea Farms with infrastructure and human resource support and minimizes capital investment requirements. Upon completion of the project, Stolt Sea Farms Ltd. could construct a commercial hatchery wherever in New Brunswick the company deemed appropriate.

### Highlights of the Aquarium and Marine Centre

Versatility is the most appropriate attribute of the Aquarium & Marine Centre. The combination of the infrastructure with the staff experience and qualifications makes an excellent combination for research and development in Aquaculture.

#### INFRASTRUCTURE

There are 8 water reserves with a total holding capacity of 600,000 litres, when combined with the heat exchangers offers many options for temperature and salinity regimes. The salt water is presently pumped from the Shippagan Harbour at a rate of 1300 litres per minute which could be easily augmented to 5000 litres per minute. Nine hundred litres per minute of non-chlorinated fresh water can be used from the city supply. The water quality has been proven acceptable to hold fish. A number of marine and fresh water finfish as well as shellfish have been successfully reproduced and raised in the facility. Among those are:

**Marine Fish**

- Mackerel - (Scomber scombrus)
- Wolffish - (Anarhichos lupus)
- Checker Eel Pout - (Lycodes vahlii)
- Greenland Cod - (Gadus ogac)

| | |
|---|---|
| **Shellfish** | • Oysters - (Crassostrea virginica)<br>• Quahogs - (Mercenaria mercenaria)<br>• Bar Clam - (Spisula Solidissima)<br>• Lobster - (Homarus americanus)<br>• Snow Crab - (Chionoctes opilio) |
| **Fresh Water Fish** | • Rainbow Trout - (Oncorhynchus mykiss)<br>• Brook Trout - (Salvelinus fontinalis)<br>• Atlantic Salmon - (Salmo salar) |

In order to carry out research and development activities in the facility, there are several dry and wet laboratories equipped with tanks of different sizes and specifications.

### STAFF

The personnel at the Aquarium and Marine Centre have wide ranging backgrounds and qualifications. The aquarium technicians have experience with many types of tanks and systems to grow a variety of fish, which complements the biological knowledge from the Aquaculture staff. The personnel also have experience in the cultivation of rotifers and artemia. In addition, five species of Algae are raised as a food source for a shellfish hatchery which is used to produce over 6 million shellfish seeds. These skills and cultured products would complement Stolt Sea Farm Ltd.'s halibut hatchery project.

## 7.2 ALTERNATE SITE OPTIONS

New Brunswick offers numerous other options for a pilot halibut hatchery. Numerous coastal sites are available along both the eastern or southern shores. Should the company wish to minimize new construction requirements, numerous fish processing plants exist that may be able to be renovated to meet pilot hatchery requirements at minimal costs.

## 7.3 FINANCIAL SUPPORT PROGRAMS: GOVERNMENT'S COMMITMENT

The two levels of government are united in their commitment to Stolt Sea Farms Ltd. to financially support a pilot halibut hatchery in New Brunswick. We recognize that Stolt Sea Farms Ltd. has invested significantly in halibut aquaculture and that your company's operations in Aga and Eggebones represent significant commitment of resources. We firmly believe that it is to Stolt Sea Farms Ltd.'s strategic advantage to position the company in New Brunswick to access the North American halibut market. At the same time, New Brunswick hopes to realize the job creation that would result from such an investment by your company. We are prepared to commit financial resources, time and effort to assist your company and our Province to realize the economic and social benefits of this exciting new industry.

# NEW BRUNSWICK ASSISTANCE PROGRAMS & INCENTIVES

The overall responsibility of the Department of Economic Development and Tourism is the development of the manufacturing, processing and selected service sectors of the New Brunswick economy. To this end, a variety of programs and services are offered, some of which are described briefly below.

- ***Financial Assistance to Industry***
  Loans, guarantees, and equity for small, medium, and large companies. Interest rates in respect to direct loans can be negotiated. Forgivable loans based on job creation can be considered depending on the project.

- ***Venture Capital Support Program***
  Interest-free loans for venture capital investment.

- ***Trade Assistance Program***
  50% of eligible costs, per diem rates, and advisory assistance for trade activities.

- ***Production and Technical Support Program***
  Financial and advisory assistance for production and product-related activities.

- ***Management Services Program***
  Financial and advisory assistance to upgrade the management function.

- ***Marketing Services Program***
  Financial and advisory assistance for marketing activities.

- ***Self Start***
  Financial assistance to "first time" entrepreneurs for small business establishment in the Province.

- ***Government Purchasing***
  Advice on provincial purchasing requirements and procedures, and assistance with registering to receive federal and provincial tender invitations.

- ***Stock Savings Plan***
  A tax credit of up to 30% applied to investment in New Brunswick companies.

# ATLANTIC CANADA OPPORTUNITIES AGENCY

The Atlantic Canada Opportunities Agency (ACOA)'s objective is to help ensure an orderly development of the finfish and shellfish aquacultural industry in New Brunswick. ACOA assists capital cost, innovation, marketing and studies by providing:

- Contributions - repayable over $100,000.
- Action Loans - a repayable loan for special capital/non-capital needs.
- Interest Buydown - up to 50% interest of a term loan.
- Loan Insurance - agreement between ACOA and financial institution to insure a portion of the lenders loss on a term loan.

Since 1988, ACOA has offered approximately $19.5 million in assistance to 198 aquaculture and aquaculture-related projects in the Fundy Region of New Brunswick. Hatcheries, growout sites, processors, non-profit industry associations & research facilities, and spin off industries have been supported by this assistance.

## Hatcheries:

Salmon spend the first 18 months in the 20 hatcheries located throughout New Brunswick. It was Stolt Sea Farm's first million-smolt hatchery, and their financing of those smolt, that permitted the growth in this industry in New Brunswick. ACOA's Action Program approved 31 hatchery projects from the Fundy Region since 1988 totaling $5.5 million in assistance.

## Growout Sites:

After the salmon have reached the 18 month period in the hatchery, the smolt are then transferred to one of the 68 sites in New Brunswick which are concentrated in the western end of the Bay of Fundy. The fish are fed and grow to 4 kilograms, more or less, being marketed approximately 18 months thereafter. A total of 77 projects related to the growout sites in the Fundy Region were approved under ACOA's Action Program. Total Assistance in this area is $6.3 million.

## Processors:

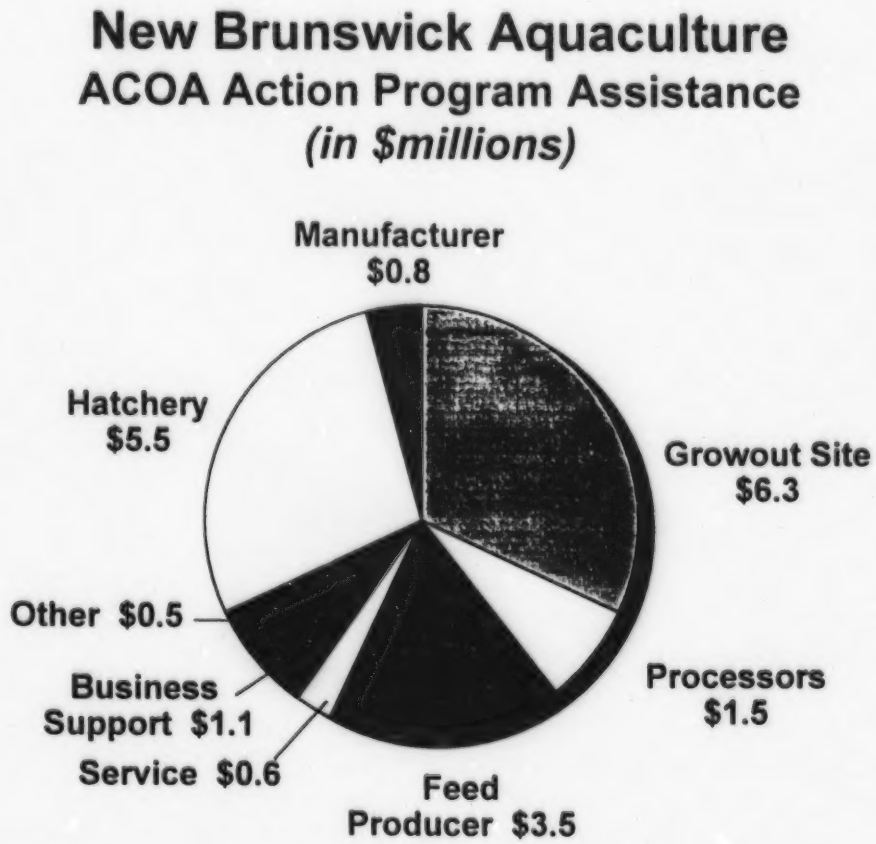
Although there are 14 processors, some of whom produce steaks and fillets, it is the leadership of Stolt Sea Farm in automating both filleting and the portioning of the fillets, and in developing innovative by-products, that continues to give New Brunswick an advantage. New value-added products could increase exports from an industry that already sells 74% of its salmon to the United States and the remainder mainly to Ontario and Quebec. 31 projects relating to processors in the aquaculture industry were approved for assistance. A total of $1.5 million was given.

## Business Support:

The two major non-commercial recipients of assistance in the Fundy Region include the Huntsman Marine Science Centre (HMCS) and the New Brunswick Salmon Growers Association (NBSGA). The HMCS, founded by a consortium of universities in eastern Canada, addresses the interests of government, industry and the public with marine science research and education. The NBSGA is the industry association of many salmon growers in the province. The NBSGA test methods of improving the productivity and competitive position of salmon aquaculture in New Brunswick at its Demonstration Farm. ACOA has approved 11 projects involving the above mentioned recipients as well as others. Total business support assistance is $1.1 million.

## Spin off Industries:

Other aquaculture spin off industries include cage and net manufacturers, feed producers, and aquaculture related services which received $767,472, $3,458,081, $464,186 respectively. ACOA's programs approved 48 aquaculture spin off industry projects totally $4.8 million.



# 8.0 Summary: New Brunswick Strategic Advantages

## 8.1 Market Potential

There is a very large market for both fresh and value added halibut in North America. The trend towards more fish in the diet for health reasons combined with declining wild stocks creates the need for aquaculture raised halibut.

## 8.2 Proven Track Record in Aquaculture Development

By the year 2000, over 44 million pounds (20,000t) of salmon will be shipped to markets throughout the world. This slow but steady growth has allowed New Brunswick farmers to prosper while producing consistently high quality fish.

Government's commitment to aquaculture development in New Brunswick is well recognized and is a model of industry-government partnership. Government decisions recognize the need to foster a sound investment climate. Government programs and services are based on an agricultural economic principles and emphasize a strategic approach to development, including sound economic principles in business, healthy seedstock and comprehensive fish health management programs, pro-active research and development programs, relevant education and training programs and sound environmentally monitoring.

## 8.3 Comprehensive Research and Development Program

New Brunswick recognizes the need for a comprehensive research and development program to support the evolution of a halibut aquaculture industry in the Province. Strategic planning between the two levels of government has led to the development and initiation of an aggressive and coordinated research effort.

## 8.4 RESEARCH INFRASTRUCTURE SUPPORT

The St. Andrews Biological Station is a scientific research institution for Fisheries and Oceans Canada. SABS has approximately 20 scientists dedicated to aquaculture and fisheries research and was instrumental in the development of the New Brunswick salmon aquaculture industry. SABS has an active halibut research and development program.

The Huntsman Marine Science Centre is an applied marine educational laboratory located immediately adjacent to the St. Andrews Biological Station. HMSC offers direct links to university and college programs throughout the eastern seaboard. Graduate and post-graduate research at HMSC compliments the new species for aquaculture development program, both at HMSC as well as SABS.

The Research and Productivity Council is a private research laboratory in Fredericton, New Brunswick that actively services the aquaculture industry in many fields, including fish health research and diagnostics, engineering, waste management and new product development. RPC is currently investigating fish health issues relative to halibut.

The University of New Brunswick is located in Fredericton, New Brunswick. The university is active in research in fish health issues in the salmon aquaculture industry as well as other aspects of the industry.

The Aquarium and Marine Centre in Shippagan is a state-of-the-art laboratory located in northeastern New Brunswick. The Marine Centre has an active shellfish hatchery with a proven track record in producing both algae and juvenile shellfish and have a high degree of experience with artemias. The facility offers sophisticated control of water temperature, salinity and other environmental factors.

## 8.5 GROW-OUT POTENTIAL

The New Brunswick salmon farmers recognize the need to diversify their species base and halibut seedstock will be in high demand. In addition to demand from existing growers, alternate marine grow-out sites will be available. Numerous upland grow-out sites exists along both coasts of the Province. In addition to New Brunswick, grow-out site potential exists in the adjacent Maritime Provinces of Nova Scotia and Newfoundland.

## 8.6 SUPPORTIVE GOVERNMENT AND INVESTMENT CLIMATE

The government of New Brunswick realizes the importance of aquaculture activities to strengthen our traditional resource base in this area and is committed to the development of this industry both with financial assistance and technical support. New Brunswick offers a sound investment climate with numerous economic competitive advantages.

## 8.7 EXISTING STOLT SEA FARM LTD. INFRASTRUCTURE IN NEW BRUNSWICK

Stolt Sea Farms Ltd. has already made significant investments in the New Brunswick aquaculture industry, including smolt hatcheries, marine grow-out sites and a state-of-the-art processing plant. This existing infrastructure coupled with the company's existing market network in North America offers a firm foundation upon which to base a diversification of operations and product line.

# 9.0 Conclusion

This document has established the need for increased aquaculture to meet the increasing demand for fish products. It also revealed that New Brunswick was a prime location for a halibut aquaculture operation that would service North American markets. There are, however; points that were not covered herein that may be of interest. The following contacts can be contacted for information on locating in New Brunswick:

**John Kershaw**
Director of Aquaculture
N.B. Department of Fisheries and Aquaculture
P.O. Box 6000
Fredericton, New Brunswick CANADA
E3B 5H1
Phone: (506) 453-2253
Fax: (506) 453-5210

*and/or*

**Tony Lampart**
Coordinator, Investment
N.B. Department of Economic Development and Tourism
P.O. Box 6000
Fredericton, New Brunswick CANADA
E3B 5H1
Phone: (506) 453-3981
Fax: (506) 444-4277